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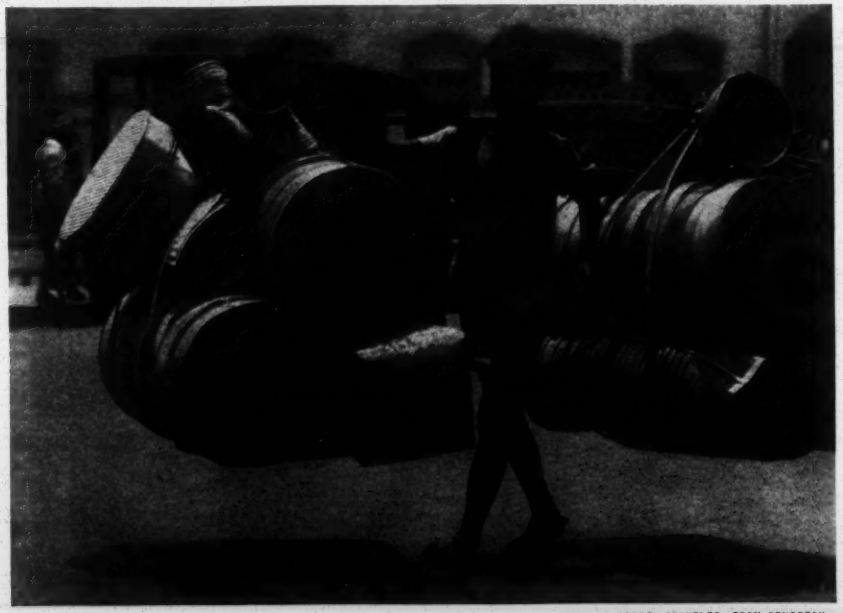

SCREEN TRAVELER, FROM GENDREAU

IN JAVA, HANDMADE BASKETS TAKE THE PLACE OF MANUFACTURED CANS

The plaited receptacles, big and little, are used for food serving, storage, and refuse. This peddler in Bandoeng, an inland health center, makes use of a shoulder pole to carry his cumbersome "truckload" of baskets from door to door (Bulletin No. 1).

COLOR PICTURES FROM THE *NATIONAL GEOGRAPHIC*

Reliable aids in visual education are the many separate color pages from the National Geographic Magazine. *Subjects covered include the United States, foreign countries, and natural history. 48 sheets for 30¢ and 96 sheets for 50¢. Write for subject list and order blank.*

Bulletin No. 1, November 24, 1947

East Indies Discord Slows Return of Trade

UNSETTLED conditions since the postwar uprising in the Netherlands Indies indicate further postponement of the once-steady flow to world consumers of such everyday products as rubber and pepper, quinine and petroleum, soap and tin.

The Indonesian Republic, where the unrest has centered and most of the clashes have occurred, covers by far the most populous and productive areas of the lushly tropical Netherlands Indies.

Java (illustration, cover), Madoera, and Sumatra, the three western islands that make up the postwar republic, normally account for the major share of the fabled export wealth of the Indies. In addition, the rich, volcanic soil of Java provides food for one of the most thickly settled regions on earth.

Vast Natural Hothouse

Java and the small adjacent island of Madoera together hold nearly 50,000,000 inhabitants. Less developed but much bigger Sumatra counts another eight or nine million, including untamed tribesmen in the wild jungles and mountains.

Intensely cultivated Java is like a vast natural hothouse. Its rice fields, scattered over thousands of square miles of valley, hill, and plain, yield the island's leading crop. Dry or flooded, they form the typical scenery of the island.

In all sizes, shapes, and shades of green, yellow, and gold, they climb steep mountainsides in narrow stairsteps, sweep in bold, sculptured lines along the hill slopes, or lie in flat geometric patchwork on the valley floors.

Of the commercial raw materials that made the Netherlands Indies one of the world's richest colonial possessions, tin is the only important commodity not produced in quantity within the designated boundaries of the Indonesian Republic. The recovery of this metal is almost entirely confined to the small islands of Bangka, Billiton, and Singkep, off the east coast of Sumatra.

Three-fourths of Indies Oil Came from Sumatra and Java

Most of the prewar rubber exports, however, originated in Sumatra and Java, on thousands of small native farms and the big plantations operated largely by Netherlands and American capital.

Nearly three-fourths of the petroleum, too, has come from European- and American-owned oil fields of Sumatra and Java, although increasingly large amounts are taken from Borneo and other areas.

Before World War II, Java held front rank as the source of quinine for the Netherlands' virtual monopoly of the drug. From this island came most of the world's supply of kapok, the downy fiber from the ceiba tree

ENTERED AS SECOND-CLASS MATTER APRIL 27, 1943, POST OFFICE, WASHINGTON, D. C., UNDER ACT OF MARCH 3, 1879.
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JOHN OLIVER LA GORCE

FISHING BOATS TIE UP AT A WATER GATE ON LISBON'S RIVER FRONT: ABOUT 1500 THIS HARBOR WRESTED COMMERCIAL LEADERSHIP FROM VENICE

After the voyages of Columbus and Vasco da Gama, Europe faced west instead of east. Lisbon, on the Atlantic, superseded Mediterranean cities as a world-trade center and became the first European emporium of the modern era. Today, liners, freighters, and transatlantic planes—as well as fishing boats—use Lisbon's anchorage (Bulletin No. 2).

Bulletin No. 2, November 24, 1947

Downtown Lisbon Wedged Between Sharp Hills

IN Lisbon (Lisboa), where celebrations are commemorating the Portuguese reconquest of the city from the Moors 800 years ago, downtown is really "down."

From residential sections that cover parallel chains of hills to east and west, Lisboans descend about 200 feet into the shopping center by dizzily steep and crooked streetcar lines or by a huge outdoor elevator (illustration, next page).

Cidade Baixa, the lower town, was originally an arm of the Tagus (Tejo) River. Filled in for centuries, it has become the natural focus of the modern city of a million people. Ocean liners and transocean planes unload passengers and freight along its water front.

Well-proportioned Squares

Boats tie up near by (illustration, inside cover), and gracefully muscular *varinas,* or fishwives, throw basketfuls of fish ashore. The swift-flowing Tagus twists the wakes of ferryboats as they push across the roadstead. Twenty miles downstream lies the open Atlantic.

The Portuguese capital is distinguished by its well-proportioned squares. The Rocío, paved partially in the typical Portuguese style of snakelike patterns, is the city's core. There coffee in tiny cups is sipped interminably in cafés. Young boys shine shoes all day. Hawkers urge passers-by to purchase lottery tickets.

The wavy designs in the Rocío's paving supposedly induced dizziness. English sailors on shore leave dubbed the plaza "Rolling-motion Square." Another English name clings to Black Horse Square, south of the Rocío on the river front.

East and northeast of Black Horse Square are the only sections of Lisbon that survived the earthquake of 1755. In the quake and the resulting tidal wave and fire, 30,000 persons died—one of the great natural calamities of modern times.

City of Musicians

In the amazingly crowded and cluttered Alfama, one of the spared areas, the most usual headgear is a basket of fish. In fact, the statuesque *varinas* of that section, who claim descent from the ancient Phoenicians, pad in their bare feet all over Lisbon, hawking fish and usually ignoring the anti-barefoot law. The men vendors make holes in their fishes and blow them up to look bigger.

At night, the wanderer through the corkscrew, up-and-down streets of the Kasbah-like Alfama hears the cadenced strumming of many guitars. Nearly everyone plays. Professional players are idolized as are great sports figures in America. Singers offer calypsolike ballads called *fadas.* These are spontaneous and unpolished but deeply moving outpourings of infinite variations and many verses.

Above the Alfama, on the highest point in the eastern part of the city, stands St. George Castle, wrested from the Moors in 1147, the beginning

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called "tropical snow." It is used for pillow and mattress stuffing, for life-belt filling, and in insulating and soundproofing materials.

Java's huge sugar-cane crop, which once formed its leading plantation export, fell off sharply after the depression of the 1930's. But both Java and Sumatra have remained important peacetime suppliers for such familiar Indies products as pepper, binding fibers, tea, coffee, and vegetable oils for margarine and soap.

Sumatra is noted for tobacco sold for high-grade cigar wrappings in certain world markets.

NOTE: The Netherlands Indies may be located on the National Geographic Society's map of the Pacific Ocean and the Bay of Bengal. Write the Society's headquarters, Washington 6, D. C., for a price list of maps.

For further information, see "The Face of the Netherlands Indies" (20 photographs), in the *National Geographic Magazine* for February, 1946; "Keeping House in Borneo," September, 1945; "Java Assignment," January, 1942; "Netherlands Indies: Patchwork of Peoples" (23 color photographs), June, 1938; and "Among the Hill Tribes of Sumatra," February, 1930.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, January 13, 1947, "Netherlands Indies to Become Three States"; and "Trade Routes to Sumatra Open Again," December 2, 1946.

MAYNARD OWEN WILLIAMS

DOWN BY THE OLD MILLSTREAM IN BATAVIA IS A RENDEZVOUS FOR WORKERS, NOT SPOONERS

Dressed in batik, not gingham, a Javanese woman does the family wash in the Molenvliet (millstream) of the island's largest city. The same watercourse provides a bathtub for the male bather and a canal for a raft of bamboo poles. The children will take a dip before their mothers finish the laundry.

Bulletin No. 3, November 24, 1947

The Round Earth on Flat Paper

DEPICTING the round earth on flat paper is a problem which has challenged the ingenuity of man ever since he first realized the world was a sphere.

To meet the need for maps for many purposes as men explored and settled their world, brilliant minds through the centuries have developed projections—ways of projecting the curved face of the earth onto flat surfaces (illustration, next page).

Such methods range from the projections invented by Hipparchus more than 2,000 years ago—and still widely used—to the new Chamberlin Trimetric projection, developed by a National Geographic Society cartographer and now being patented.

Mapping Techniques Described in Layman's Language

In accordance with the purpose for which it was founded, "the increase and diffusion of geographic knowledge," the Society recently published "The Round Earth on Flat Paper," a history, description, and analysis of the principal map projections.

Written and illustrated by Staff Cartographers Wellman Chamberlin and Charles E. Riddiford, the monograph explains in layman's language the technical features of world mapping. The 126-page booklet includes an article by Gilbert Grosvenor, editor of the *National Geographic Magazine*, on "Map Services of the National Geographic Society" and is illustrated with 119 photographs, explanatory diagrams, and maps.

"A globe is an accurate model of the earth and is the only possible medium of showing all geographical relationships truly," the monograph points out. "But globes have their practical drawbacks. They are necessarily limited in scale. For example, the globe which would show Europe on the same scale as the National Geographic Society map of that continent would have to be seven feet in diameter.

Absolute Accuracy Impossible on Flat Surfaces

"Every school or library should have a globe, but globes are too cumbersome for the cockpit of a plane, a general's pocket, or many other places where accurate geographic facts must be determined readily. These limitations of the globe gave rise to cartography, the making of maps.

"It would be convenient to say that a map is an accurate copy of a globe, but unfortunately this is not possible. The map is printed on a flat piece of paper which can be laid out on a table, bound in an atlas, folded neatly, or rolled in a cylinder. No sizable portion of a globe can be so treated. . .

"Cut a hollow rubber ball in half; then try to press one of the halves down on a table. You cannot do it without tearing or stretching. . .

"If you tried to do the same thing with your library globe, halving it along the Equator, you would find that when it was stretched or torn sufficiently to be pressed flat, distances from one point to another along the Equator, and areas as well, would be badly distorted."

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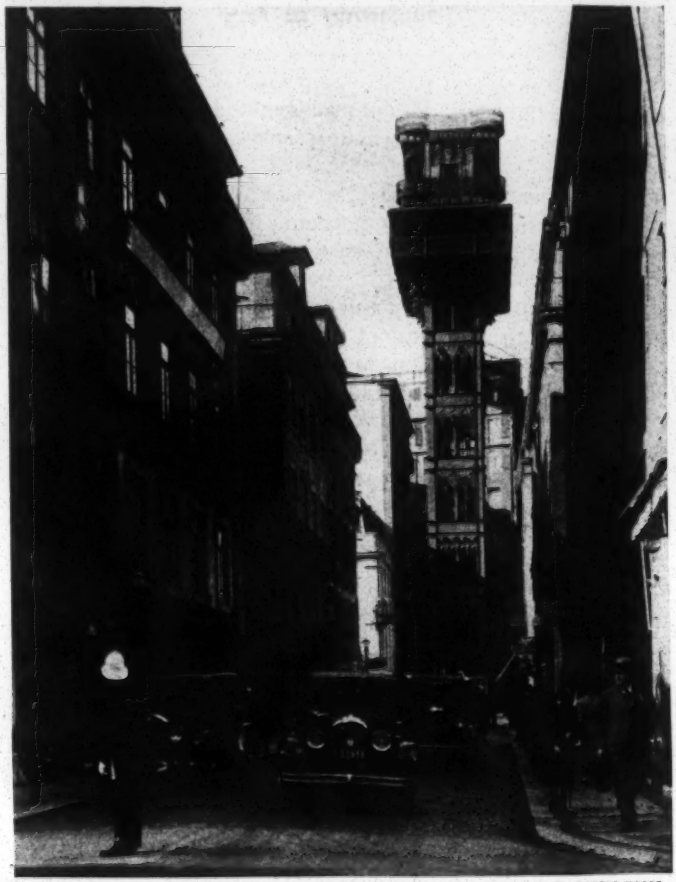
date of modern Portugal. The local force under Affonso Henriques was aided by an army of English Crusaders who marked up a victory there against the infidels while on the way to the Holy Land. Lower on the hill stands *el Sé*, the earthquake-spared cathedral where Affonso Henriques first planted the cross.

Far to the west, on the ridge of hills across the downtown declivity, lie the modern residential sections of L'Occidental and Buenos Ayres.

NOTE: Lisbon may be located on the Society's map of Europe and the Near East.

For additional information, see "Lisbon—Gateway to Warring Europe," in the *National Geographic Magazine* for August, 1941; "Castles and Progress in Portugal," February, 1938;* and "The Pathfinder of the East," November, 1927. (*Issues marked with an asterisk are included in a special list of Magazines available to teachers in packets of ten for $1.00.*)

See also, in the GEOGRAPHIC SCHOOL BULLETINS, May 5, 1947, "Portugal Still Rules Macau on China Coast"; and "Election Kept Portugal's One-Party Government in Power," January 14, 1946.



W. ROBERT MOORE

TO GET FROM "DOWNTOWN" TO "UPTOWN," LISBOANS USE THIS TOP-HEAVY OUTDOOR ELEVATOR

Behind it a footbridge across roof tops connects with shopping and residential sections nearly 200 feet higher than the Rua da Santa Justa (foreground) in Lisbon's "lower town." In other places zigzagging stairs or circuitous streetcar lines join the different levels of Portugal's capital.

Bulletin No. 4, November 24, 1947

Walnuts Lead the Thanksgiving Nut Parade

MIXED nuts, in their shells of blending autumn browns, are plentiful this year for Thanksgiving Day festivities.

Five varieties that please the frost-nipped palate and snap loudly in the nutcracker are the stand-bys of the popular mixtures which the housewife buys at the grocery. This autumn a mixed scoopful is likely to contain 40 percent English walnuts, 20 percent each of pecans and Brazil nuts, 10 percent each of almonds and filberts (also called hazelnuts).

California Walnut Groves Lead Production

Only the Brazil nuts are certain to be imported. Only the pecans, native Americans, are certain to be domestic. Big harvests in this country, some imports, and sizable reserve stocks from last year add up to an abundance of walnuts, almonds, and filberts.

The English walnut tree *(Juglans regia)* grows in almost every State in the Union. The commercial orchards, however, are chiefly in California, and reach up into Oregon. They cover some 260 square miles of land. Their average recent yield of 70,000 tons is the largest domestic harvest of tree nuts and the largest English walnut production of any country. France, China (illustration, next page), Italy, and the Balkan countries produce walnuts in large quantities.

The name walnut (once spelled "wallnut") has no connection with walls. It is derived from the Anglo-Saxon and means "foreign nut," because it was taken to England from Persia by way of the European continent. In the United States it is commonly called the English walnut. This title, applied because the nut was brought here from England, distinguishes it from the American black walnut *(Juglans nigra)*. It could be called, more appropriately, the Persian walnut for the land from which Roman wanderers spread it in early times.

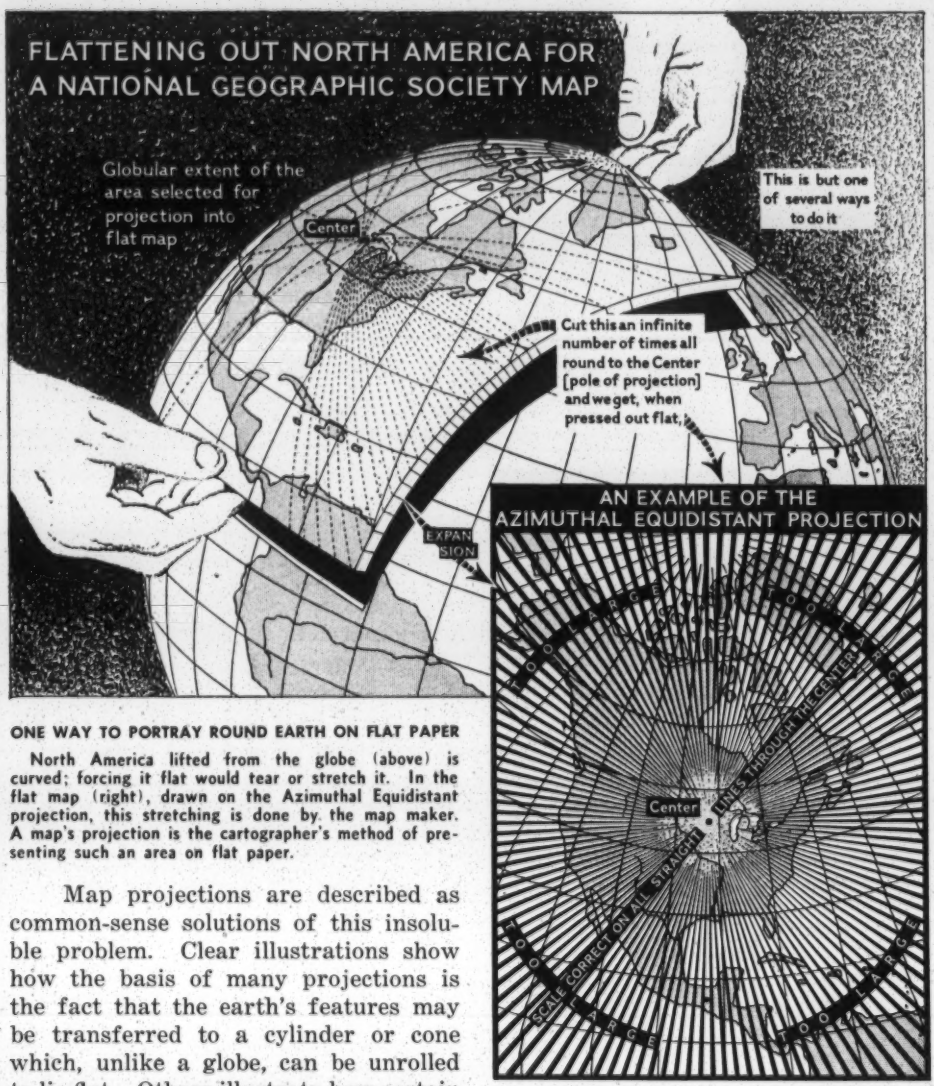
The English walnut can be stored for months without spoiling. This sturdy dependability, added to its fine flavor and high food value, helps put the walnut at the top of the nut industry.

"Wild" Pecans Bolster Improved Crop

The pecan ranks second among domestic tree-nut crops. There are nearly 100 varieties. Obviously a relative of the hickory nut, the pecan is harvested commercially in a dozen States from North Carolina to Texas. Beyond the borders of the United States, only Mexico is a pecan producer. And our neighbor south of the border grows the nut on a very small scale.

Georgia, the top grower of "paper-shell" and other improved varieties of the pecan, has a below-average 1947 crop. Oklahoma and Texas, with big crops of the wild, or so-called seedling, varieties, lift the current pecan total close to the 53,000-ton average.

California now grows 30,000 or more tons of almonds a year. Oregon and Washington grow 8,000 tons of filberts. These two nuts are not grown to any commercial extent in other States. The west-coast output of both almonds and filberts, developed since World War I, is but a small


FLATTENING OUT NORTH AMERICA FOR A NATIONAL GEOGRAPHIC SOCIETY MAP
Globular extent of the area selected for projection into flat map
Center
This is but one of several ways to do it
Cut this an infinite number of times all round to the Center [pole of projection] and we get, when pressed out flat,
EXPAN SION
AN EXAMPLE OF THE AZIMUTHAL EQUIDISTANT PROJECTION
TOO LARGE
TOO LARGE
LINES THROUGH THE CENTER ARE TRUE
Center
SCALE CORRECT ON ALL STRAIGHT
TOO LARGE
TOO LARGE

ONE WAY TO PORTRAY ROUND EARTH ON FLAT PAPER

North America lifted from the globe (above) is curved; forcing it flat would tear or stretch it. In the flat map (right), drawn on the Azimuthal Equidistant projection, this stretching is done by the map maker. A map's projection is the cartographer's method of presenting such an area on flat paper.

Map projections are described as common-sense solutions of this insoluble problem. Clear illustrations show how the basis of many projections is the fact that the earth's features may be transferred to a cylinder or cone which, unlike a globe, can be unrolled to lie flat. Others illustrate how certain projections are based on theoretical views of the earth—from a point infinitely high above it, from the center of a transparent globe, or from its opposite side.

Considerable attention is given to transverse, or "off-center," projections. These involve the most extensive computations but offer the best solution to many modern mapping problems, including the preparation of accurate strip maps for air navigation.

The National Geographic's 39 current ten-color maps employ 13 different projections, two of which were originated in the Society's studios.

NOTE: Copies of the booklet, "The Round Earth on Flat Paper," are available at the Society's headquarters, Washington 6, D. C., at 50¢ each.

Bulletin No. 5, November 24, 1947

León, Nicaragua City, Lives under Volcano

CERRO NEGRO (Black Hill) hangs like the sword of Damocles in the air above León, Nicaragua's second city. Its latest eruption, after several quiescent years, buried a big coffee-growing area under black sand and heaped four inches upon León itself.

In the chain of 23 or more volcanoes paralleling the Central American republic's Pacific coast, Cerro Negro rises to 3,200 feet above sea level only a dozen miles northeast of León. The cone forms part of a group known as Las Pilas.

Eruptions Alter Peak and Countryside

The name of this cluster of volcanic peaks is taken from Las Pilas, a somewhat higher crater three miles to Cerro Negro's east.

Eruptions in 1850, 1867, and 1923 considerably changed the shape of Cerro Negro and the contours of the countryside. Just as the recent eruption has done, these outbursts temporarily paralyzed the agriculture which thrives on the fertility of old volcanic ash. Normally grown are coffee, cotton, beans, castor and sesame seed, and teosinte—a tall grass often considered to be the ancestor of maize, or Indian corn.

León's 50,000 residents have become philosophical about the recurrent fury of near-by Las Pilas, Telica, and Momotombo of the volcanic chain. A farming center and junction for Corinto, the republic's chief west-coast port, León preserves the atmosphere of early colonial days. It is built around the pre-conquest Indian village of Subtiaba.

The prevalent winds blow from Cerro Negro toward León and the Pacific. During the black dust falls, women do their shopping under umbrellas. Small industries shut down because of the penetrating ash, and railroad gangs shovel and sweep to keep the lines open. The deposits exceeded a depth of two feet along a branch line three miles from the crater.

The Nicaraguan volcanoes are part of the Central American chain that extends from Mexico's southern border to Panama. Like the Java-Sumatra chain and the Aleutians, the two other principal volcanic chains of the world, it is most active in its central portion.

Managua, the Capital, Also Knows Destruction

At the northwest end of the Nicaraguan chain is squat, topless Cosegüina, with a lake in its crater. The violence with which its top exploded on January 20, 1835, is ranked among modern blasts as second only to the explosion of Krakatau, off western Java, in 1883. Cosegüina heaped several inches of ash on León, 100 miles away, and its noise was heard as far away as Jamaica and Bogotá, the latter 1,100 miles distant.

Forty miles southeast of Cerro Negro lies Managua, Nicaragua's capital. It is one of the world's most modern cities because it was rebuilt after almost complete destruction by earthquake in March, 1931.

A route for an Atlantic-to-Pacific canal that would shorten the ship run between New York and San Francisco by many hundred miles follows the San Juan River and crosses Lake Nicaragua in southern Nicaragua.

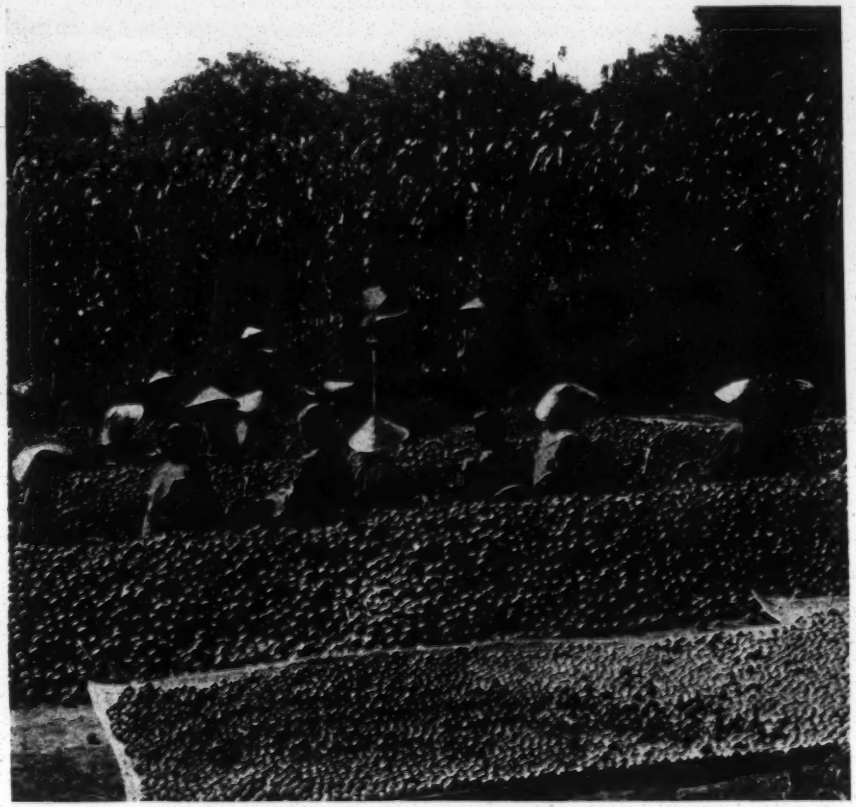
fraction of the world harvest. Italy and Spain produce enormous crops of both. Turkey, chief source of filberts, has also many almond groves.

The Brazil nut is the seed of a hard, tough fruit like the coconut that grows along Amazon River tributaries in Brazil and west to Peru and Bolivia. The nuts, removed from the hull in the jungle where they grow, are brought down the river to the port of Belém (Pará). About half of the prewar crops were shipped to the United States.

Among tree nuts grown in large quantities, the cashew nut is a lone wolf, taking no part in the mixtures sold in shells. Imported from Portuguese East Africa and from India, it leaves its shell behind on its native heath.

NOTE: Regions where nuts are grown in commercial quantities may be located on the Society's World Map.

For additional information about nuts, see "Brazil's Babassu Nut Business May Compete with Coffee," in the GEOGRAPHIC SCHOOL BULLETINS, February 14, 1944; and "Peanuts Volunteer for Front-Line Duty," April 27, 1942.



P. H. DORSETT, COURTESY U. S. DEPARTMENT OF AGRICULTURE

HARVESTING THE WALNUT CROP IN HOPEH IS A FAMILY AFFAIR

Seated between miniature mountain ranges of "English" walnuts, Chinese women and children hull the harvest near Li Ke Chuang, in China's Hopeh Province. The nuts, which look as large as apples in their padding of husks, have been dumped in mounds after gathering, and left for several days covered with straw of millet or some other grain. The peaked hats and wicker baskets of the harvesters and the straw mat on which hulled nuts are spread to dry (foreground) are examples of local handicraft.

The volcano and earthquake activity of the region prompted the decision in favor of Panama, however, when plans for a canal first were made.

Nicaragua is Central America's largest country and its most thinly populated one. It is a little larger than Iowa. Three out of four of its million-plus inhabitants live on the Pacific strip of mountains and coastal lowlands. Only one-fifteenth of the country's area is under cultivation, but agriculture is the principal source of national wealth.

NOTE: Nicaragua is shown on the Society's map, Countries of the Caribbean.

For additional information, see "A Land of Lakes and Volcanoes," in the *National Geographic Magazine* for August, 1944;* "An Army Engineer Explores Nicaragua," May, 1932; and "Nicaragua, Largest of Central American Republics," March, 1927.

DRAWN BY THEODORA PRICE

THERE IS LITTLE CONTACT BETWEEN NICARAGUA'S COASTS; THE EAST SECTION IMPORTS FOOD FROM THE UNITED STATES WHILE THE CULTIVATED PACIFIC SLOPES GROW PLENTY